

MAGNETIC HARD DISK RECORDING HEAD

WITH SELF-COMPENSATING THERMAL EXPANSION

ABSTRACT

A magnetic head for reading information from and writing information to a hard
5 magnetic disk having reduced thermal protrusion at the air bearing surface. In some
embodiments, a read-head portion of the magnetic head includes one or more read insulation
layers, and a write-head portion of the magnetic head includes one or more write insulation
layers. The magnetic head may optionally further include one or more insulation layers
between the read-head portion and the write-head portion. One or more of these insulation
10 layers includes a material with a negative thermal expansion characteristic, including but not
limited to, carbon fiber, zirconium tungstate ($\text{Zr W}_2 \text{O}_8$), or hafnium tungstate ($\text{Hf W}_2 \text{O}_8$).